SPECIFICATION

TITLE

METHOD FOR SWITCHING A SUBSCRIBER STATION FROM A FIRST TELECOMMUNICATIONS NETWORK TO A SECOND TELECOMMUNICATIONS NETWORK

BACKGROUND OF THE INVENTION

Field of the Invention

The invention relates to a method for switching a subscriber station from a first telecommunications network to a second telecommunications network. The second telecommunications network is connected to the first telecommunications network via at least one connection point, with primary routing information relating to the switched subscriber station being contained in both telecommunications networks. This primary routing information defines the process of setting up a connection from the second telecommunications network to the local exchange of the first telecommunication network.

Description of the Related Art

The requirement for an efficient method of the abovementioned type has become considerably more important recently owing to the worldwide increasing deregulation in the field of telecommunications. According to the relevant deregulation, alternative telecommunications network operators will compete with traditional telecommunications network operators. In this case, legal regulations (for example the Network Access Order in Germany and the Telecommunication Act in the USA) mean that the traditional telecommunications network operators who are currently in the market have the obligation to allow use of services physically at the respective interface without discrimination and subject to the same conditions as themselves.

On the basis of the outline legal requirements and their implementation, a subscriber who is already connected to the telecommunications network of a traditional telecommunications network operator is free, after changing to a competing telecommunications network operator, to use his services, tariff facilities and other services.

Options that the alternative telecommunications network operator wishes to have, in general, are electrical access to the subscriber lines - (in order to operate a subscriber station or the subscriber stations connected to his network,) - switching of the relevant subscriber stations from the traditional telecommunications network, (referred to from here on as the first telecommunications network,) to the alternative telecommunications network, (referred to from here on as the second telecommunications network). The network change required to do this can be carried out conventionally by disconnecting the subscriber line of the respective subscriber station from the local exchange, or some upstream network facility such as a main distribution panel or cable junction unit, in the first telecommunications network, and connecting it to the corresponding facility in the second telecommunications network. However, these measures - (which need to be carried out manually) - are in general not yet sufficient to allow the relevant subscriber station which intends to retain its old telephone number, - (at which he could be accessed in the first telecommunications network) - in the second telecommunications network to be accessed from both the first telecommunications network and in the second telecommunications network. In fact, different entries in the local exchanges of the two telecommunications networks relating to the relevant subscriber station still need to be implemented and, respectively, deleted. Furthermore, the primary routing information relating to the relevant subscriber

station must be matched as appropriate to the different conditions in the two telecommunications networks.

In addition, the switching referred to above on a subscriber station which is connected to a first telecommunications network from the first telecommunications network to the second telecommunications network results in a problem in that this switching process - (and the measures associated with it and which need to be taken in the first telecommunications network and in the second telecommunications network) are generally not carried out at the same time or by the same personnel. However, this means that the relevant subscriber station which is to be switched may possibly not be accessible either in the first telecommunications network or in the second telecommunications network for a lengthy period. In this context, it would be desirable for the time involved in changing from the first telecommunications network to the second telecommunications network to be as short as possible, that is to say to limit it to the duration of the switching process.

SUMMARY OF THE INVENTION

The invention is accordingly based on the object of configuring the method of the type mentioned initially such that a subscriber station which is to be switched from the first telecommunications network to the second telecommunications network is accessible for as much of the time as possible, while retaining its telephone number.

According to the invention, the object described above is achieved with regard to a method of the type mentioned initially on the one hand in that secondary routing information is initially stored in the local exchange of the first telecommunications network, which secondary routing information defines the setting up of a connection for

the relevant subscriber station, when the subscriber station is not present, via the connection point to the second telecommunications network, and in that, finally, the relevant subscriber station is disconnected from the local exchange of the first telecommunications network and is connected to the local exchange of the second telecommunications network.

The invention results in the advantage that, just by administrative action in the first telecommunications network and by connecting the said subscriber station to the local exchange of the second telecommunications network, the relevant subscriber station which is switched from the first telecommunications network to the second telecommunications network retains its maximum possible accessibility in the course of this "changeover" from the first telecommunications network to the second telecommunications network. Furthermore, during the changeover the relevant subscriber station remains accessible via its telephone number at which it was originally accessible in the first telecommunications network. Non-accessibility of the relevant subscriber station is in this case reduced only to the short period for switching from the first telecommunications network to the second telecommunications network. That is to say the relevant subscriber station is accessible virtually all the time, without any interruption, and can itself always set up connections.

The primary routing information in the second telecommunications network relating to the relevant subscriber station is preferably changed in such a manner that connections in the second telecommunications network to the relevant subscriber station are set up to the local exchange of this second telecommunications network. This results in the advantage that, after switching, the subscriber station is accessible

in switching technology terms, in particular for connections which originate in the second telecommunications network.

With the storage of the secondary routing information in the local exchange of the first telecommunications network relating to said subscriber station, further details are expediently defined. These details, - (in the course of connection requests which are passed to the local exchange of the first telecommunications network relating to the relevant subscriber station in the local exchange of the first telecommunications network,) - provide information to a subscriber station which is involved in the change. These details are evaluated in the course of setting up a connection to the relevant subscriber station so that in the situation where the relevant subscriber station is still connected to the local exchange of the first telecommunications network, the process of setting up a connection to the relevant subscriber station is carried out via this local exchange. On the other hand, if the subscriber station is no longer connected to the relevant local exchange, the associated secondary routing information is used. This results in the advantage of relatively simple method steps in the course of setting up a connection to the subscriber station under consideration in order to distinguish between the two situations in which the relevant subscriber station is still connected or is no longer connected to the local exchange of the first telecommunications network.

Advantageously, any fault which is caused on the subscriber station access line during disconnection of the relevant subscriber station is used to activate the secondary routing information relating to the relevant subscriber station in the local exchange of the first telecommunications network. This results in the advantage that the routing information is updated immediately and that the subscriber station is more accessible.

Preferably, after the disconnection of the relevant subscriber station from the local exchange of the first telecommunications network, the primary routing information in the first telecommunications network is changed in such a manner that connection requests originating from the first telecommunications network to the relevant subscriber station are passed from the first telecommunications network via the said connection point to the second telecommunications network. This results in the advantage of a reduction in the traffic load in the first telecommunications network for connection requests to the said subscriber station.

The secondary routing information relating to the relevant subscriber station in the local exchange of the first telecommunications network is then preferably deleted. Specifically, this secondary routing information is no longer required in the local exchange of the second telecommunications network.

Furthermore, details relating to the relevant subscriber station which was previously connected there are advantageously deleted in the local exchange of the first telecommunications network. These details are also no longer required in this local exchange.

Expediently, in the situation where the subscriber station is an analog subscriber station, a line fault in the local exchange of the first telecommunications network during disconnection of the subscriber station is caused by a ground fault or short circuit of the associated subscriber line. For analog subscriber stations, this represents a simple and effective measure for signaling the disconnected state.

A carrier signal is expediently made permanently effective for the duration of the subscriber switching and is monitored by the local exchange of the first telecommunications network in order to identify a line fault on a digital subscriber

access line. For a digital subscriber access line, this measure likewise represents a simple and effective measure for signaling the disconnected state.

In a second embodiment, secondary routing information is initially stored in the exchange of the second telecommunications network. This secondary routing information defines the setting up of a connection for the relevant subscriber station when the subscriber station is not present via the said connection point to the first telecommunications network. As such, the primary routing information in the second telecommunications network relating to the relevant subscriber station is then changed so that connections in the second telecommunications network to the relevant subscriber station are set up to the local exchange of this second telecommunications network. Finally, the relevant subscriber station is disconnected from the local exchange of the first telecommunications network and is connected to the local exchange of the second telecommunications network. This measure means that, just by administrative action in the second telecommunications network and by connecting the said subscriber station to the local exchange of the second telecommunications network, the relevant subscriber station which is being or has been switched from the first telecommunications network to the second telecommunications network is fully accessible, (without its telephone number being changed,) until the said process of switching between the two telecommunications network, and is accessible only in this second telecommunications network only once it has been connected to the local exchange of the second telecommunications network. However, full accessibility from both telecommunications networks will be guaranteed if at least one additional measure, which is still to be explained, is taken.

Expediently, with the storage of the secondary routing information in the local exchange of the second telecommunications network relating to the said subscriber station, further details are defined. These details, - (in the course of connection requests which are passed to the local exchange of the second telecommunications network relating to the relevant subscriber station in the local exchange of the second telecommunications network,) - provide information to a subscriber involved in the change. Furthermore, these details are evaluated in the course of setting up a connection to the relevant subscriber station in such a manner that, in the situation where the relevant subscriber station is already connected to the associated local exchange, the process of setting up a connection to the relevant subscriber station is carried out via this local exchange. On the other hand, if the subscriber station is not yet connected to the relevant local exchange, the associated secondary routing information is used. This results in the advantage of relatively simple method steps in the course of setting up the connection to the subscriber station under consideration, in order to distinguish between the two situations, namely, in which the relevant subscriber station is not yet connected or is already connected to the local exchange of the second telecommunications network.

Preferably, a fault end signal which is caused during connection of the relevant subscriber station to the associated subscriber station access line is used to deactivate the secondary routing information relating to the relevant subscriber station in the local exchange of the second telecommunications network. In consequence, the connection of the relevant subscriber station to the local exchange of the second telecommunications network can be identified quickly and unambiguously.

After disconnection of the relevant subscriber station from the local exchange of the first telecommunications network, the primary routing information in the first telecommunications network is expediently changed in such a manner that connection requests originating from the first telecommunications network to the relevant subscriber station are passed from the first telecommunications network via the said connection point to the second telecommunications network. This results in the advantage that the relevant subscriber station is thus also fully accessible once again from the first telecommunications network, and can also set up connections to subscriber stations in this first telecommunications network.

Expediently, the secondary routing information relating to the relevant subscriber station in the local exchange of the second telecommunications network is deleted. This information is no longer required there and thus no longer loads the relevant local exchange once it has been deleted.

Preferably, in the local exchange of the second telecommunications network, the details which were previously stored there together with the secondary routing information and on the basis of which the relevant subscriber station is involved in the change, is changed regarding details which indicate the connection of the relevant subscriber station to this local exchange. This results in the advantage that the completion of the switching phase and the connection of the relevant subscriber station can be identified particularly easily.

Expediently, on connection of the subscriber station and in the situation where this is an analog subscriber station, a line fault end is achieved at the local exchange of the second telecommunications network by rectification of a ground fault or short

circuit existing there on the associated subscriber line. This results in the advantage of immediate signaling of the connection state of the subscriber station.

A carrier signal is preferably made permanently effective for the duration of the subscriber station switching and is monitored by the local exchange in order to identify a line fault on a digital subscriber access line. This results in the advantage that the connection of a digital subscriber station can be identified quickly.

Two fundamental methods, a first method and a second method, and their expedient developments to achieve the object mentioned initially have been analyzed above, on the basis of which the switching measures which need to be carried out administratively have in each case been carried out first of all only in the first telecommunications network and in the second telecommunications network.

The following text describes how the object of the invention is achieved, according to the invention, by a third method variant in that the method steps of the described second method are used in addition to the method steps of the first method described above. As such, secondary routing information is in each case initially stored in the local exchange of the first telecommunications network and of the second telecommunications network - (this secondary routing information relates to the relevant subscriber station when no connection has been set up via the said connection point to the respective other telecommunications network). Thereafter, the primary routing information in the second telecommunications network relating to the relevant subscriber station is changed in such a manner that connections in the second telecommunications network to the relevant subscriber station are set up to the local exchange of this second telecommunications network. Finally, the relevant subscriber

station is disconnected from the local exchange of the first telecommunications network and is connected to the local exchange of the second telecommunications network.

The invention results in the advantage that the subscriber station which is switched from the first telecommunications network to the second telecommunications network retains its best possible accessibility in the course of this "changeover" from the first telecommunications network to the second telecommunications network. Furthermore, in the process, the subscriber station is always - (and remains) - accessible via its telephone number at which it was originally accessible in the first telecommunications network. Since the secondary routing information is stored in the local exchanges of both telecommunications networks, and, in practice, is active only when the subscriber station under consideration is not present, - (that is to say when the subscriber station under consideration is not yet connected or is no longer connected,) - the said subscriber station is still fully accessible in the first telecommunications network, as if it were still connected to the local exchange in that first telecommunications network. Furthermore, the subscriber station is once again fully accessible immediately in the second telecommunications network, once it is connected to the local exchange of that second telecommunications network. The inaccessibility of the relevant subscriber station is thus reduced just for the short period of switching from the first telecommunications network to the second telecommunications network. In other words, the relevant subscriber station is accessible virtually all the time, without any interruption, and can always set up connections itself. It is likewise virtually always possible to set up connections from the subscriber station to other subscriber stations in both telecommunications networks.

With the storage of the secondary routing information in the local exchanges of the two telecommunications networks relating to the subscriber station, further details are preferably defined which, in the course of connection requests - (which are passed to the respective local exchange relating to the relevant subscriber station) - provide, - (in the local exchange of the first telecommunications network,) - information about a subscriber station which is involved in the change. These details, in the local exchange of the second telecommunications network, provide information relating to a subscriber involved in the change. Furthermore, these details are evaluated in the course of setting up a connection to the relevant subscriber station, that, in the situation where the relevant subscriber station is still or is already connected to the associated local exchange, the connection to the relevant subscriber station is set up via this local exchange. On the other hand, if the subscriber station is not yet or is no longer connected to the relevant local exchange, the associated secondary routing information is used. This results in the advantage of relatively simple method steps in the course of setting up a connection to the subscriber station under consideration in order to distinguish between the two situations in which the relevant subscriber station is not yet or is no longer connected to the one local exchange, and is not yet or is already connected to the other local exchange.

Expediently, in order to activate the secondary routing information relating to the relevant subscriber station in the respective local exchange, the access line for the relevant subscriber station is grounded or short-circuited if this is an analog subscriber station, and has a carrier signal applied to it continuously if this is a digital subscriber station. The non-connection or connection of the relevant subscriber station to the respective local exchange can thus be identified quickly and unambiguously.

Preferably, after connection of the relevant subscriber station to the local exchange of the second telecommunications network, the primary routing information in the first telecommunications network is changed in such a manner that connection requests originating from the first telecommunications network to the relevant subscriber station are passed from the first telecommunications network via the said connection point to the second telecommunications network. This results in the advantage that unnecessary loads on the first telecommunications network can be avoided in the course of setting up connections to the said subscriber station.

The secondary routing information relating to the relevant subscriber station is then preferably deleted in the local exchanges of both telecommunications networks. This secondary routing information is superfluous once the subscriber station has been switched, and thus no longer need be stored in the local exchanges.

Expediently, details relating to the relevant subscriber station which was previously connected there are also deleted in the local exchange of the first telecommunications network. The subscriber directory in the relevant local exchange is thus updated once again and is corrected to match the actual situation.

It is also advantageous that, in the local exchange of the second telecommunications network, the details which were previously stored there together with the secondary routing information and on the basis of which the relevant subscriber station is involved in the change, is changed regarding details which indicate the connection of the relevant subscriber station to this local exchange. The present situation is thus also kept correct in this local exchange by updating.

Expediently, the primary and secondary routing information in the respective telecommunications network can be stored and made available either locally at the

exchange level or centrally in the network. This results in the advantage that the method according to the invention is applicable to all normal network architectures of present-day telecommunications networks.

Connection control which is carried out a number of times via the connection point between the two telecommunications networks in the course of setting up one and the same connection is preferably detected by counting the passing of the connection through the respectively involved transient nodes. As such, the relevant connection is cleared if a defined number of such connection passes is exceeded. However, such connection control can likewise advantageously be avoided by special measures in the local exchanges OV1, OV2 which are involved. One of these special measures may be, for example, for the local exchange which passes on the connection to the further network, to generally reject repeated use of the subscriber station during a guard time, so that such connections, which are routed more than once via the connection point between the networks, are cleared in a simple manner. This allows the load on the two telecommunications networks and the gateway points to be reduced in the situation where connections have to be set up to the relevant subscriber station at a time when this is actually being switched or while it is not connected to both telecommunications networks, or in the event of it not being accessible owing to an actual line fault during the switching phase.

The method according to the invention can be used advantageously even in the situation where the subscriber station is not directly connected to at least one of the local exchanges. In this case, the subscriber station is connected, or can be connected, via an access network interface to at least one of the local exchanges, and the availability/non-availability of the subscriber station, which is signaled by the access

network to the respective local exchange, is used as a criterion for activation or deactivation of the process of setting up a connection to the relevant subscriber station in accordance with the respective secondary routing information.

This is associated with the advantage that the method can also be used in networks which modern network architectures, in which access networks are increasingly providing the functions of subscriber access concentrators.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure1 shows, schematically, a first telecommunications network and a second telecommunications network, with the first telecommunications network having connected to it a subscriber station which can be accessed from both telecommunications networks and is intended to be connected to the second telecommunications network.

Figures 2 and 3 show switching measures according to a first embodiment of the invention.

Figures 4 and 5 show switching measures according to a second embodiment of the invention.

Figures 6 to 8 show switching measures according to a third embodiment of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

With regard to the method according to the invention which is explained in detail in the following text, Figure 1 shows the original state of the two telecommunications networks N1 and N2, which are connected to one another via at least one connection point GW. Before describing this method, it is intended first of all to analyze the fundamental design of the two telecommunications networks N1 and N2 to the extent necessary to understand the invention.

Each of the two telecommunications networks N1 and N2 has a number of exchanges, of which only the local exchanges OV1 and OV2 are indicated in the present case. According to Figure 1, the subscriber station TLN, which is intended to be switched to the telecommunications network N2, is connected to the local exchange OV1 of the telecommunications network N1.

Tables PLT1 and PLT2, respectively, are indicated in the telecommunications networks N1 and N2, and these contain primary routing information for each subscriber station in both the telecommunications network N1 and the telecommunications network N2. The two tables PLT1 and PLT2 for primary routing information are indicated as simple tables, which each have two columns T and N. The column T may contain, for example, the telephone number of the respective subscriber station, and the column N may contain details about the telecommunications network to which the respective subscriber station is connected. According to Figure 1, an x - which is intended to be the telephone number of the subscriber station TLN - is entered in the column T in the table PLT1, and a 1 is entered in the column N in this table. This means that a connection request V1 is formed, or a connection is set up, within this telecommunications network N1 to the subscriber station TLN with the telephone

number x in this telecommunications network N1, in the present case to the local exchange OV1.

In some circumstances, each of the two telecommunications networks N1 and N2 also contains a respective table SLT1 or SLT2 for secondary routing information, which will be described in more detail in the following text. According to Figure 1, these tables SLT1 and SLT2 each contain three columns T, N and U, with only the table SLT1 containing the telephone number "x" of the subscriber station TLN in the column N and containing a numeral 1 in the column N, that is to say information about the accessibility of this subscriber station in the first telecommunications network N1. At this time, the corresponding table SLT2 for the second telecommunications network N2 does not yet contain any details relating to the subscriber station TLN.

As described, the primary and secondary routing information stored in the tables PLT1, PLT2, SLT1 and SLT2 described above can be stored and provided in the respective network locally at the exchange level or else centrally in the network.

The method according to the invention will now be explained on the basis of the first embodiment or alternative and with reference to Figures 2 and 3.

According to Figure 2, an x - the telephone number of the relevant subscriber station TLN - is first of all entered as secondary routing information relating to the subscriber station TLN in the column T in table SLT1 in the first telecommunications network N1, and a 2 is entered in the associated column N. A character "w" is entered in the further column U of the relevant table SLT1 for the subscriber station TLN with the telephone number "x". This character or this statement represents additional details which provide information about a subscriber station involved in a change in the course of connection requests relating to the subscriber station TLN under consideration being

passed to the respective local exchange. The evaluation of these details in the course of setting up a connection to the relevant subscriber station TLN will be explained in more detail further below.

Connection requests V1 and V2 which occur before the switching of the subscriber station TLN from the first telecommunications network N1 to the second telecommunications network N2 are passed by both telecommunications networks N1 and N2 to the local exchange OV1 of the first telecommunications network N1. If, in consequence, the subscriber station TLN is disconnected from the local exchange OV1 of the first telecommunications network N1 and is connected to the local exchange OV2 of the second telecommunications network N2, as is shown in Figure 2, then such connection requests V1 and V2 are in each case first of all passed to the local exchange OV1 of the first telecommunications network N1 and, on the basis of the secondary routing information available there, are passed via the said connection point GW between the two telecommunications networks N1 and N2 to the second telecommunications network N2 and, in this network, to the local exchange OV2 (see dashed line).

In conjunction with the measures described above, the primary routing information in the second telecommunications network N2 relating to the relevant subscriber station TLN can be changed in such a manner that connections in the second telecommunications network N2 to the relevant subscriber station TLN are set up directly to the associated local exchange OV2 of this second telecommunications network N2.

The subscriber station TLN, which is switched after setting up the said secondary routing information in the local exchange OV1 of the first telecommunications network

N1, can thus be accessed from both networks virtually immediately after the switching process and after changing the primary routing information in the second telecommunications network.

There is no need for any secondary routing information, as shown in table SLT2, in the local exchange OV2 of the second telecommunications network N2.

Figure 3 shows that the column N relating to the subscriber station with the telephone number "x" is changed from 1 to 2 in the table PLT2 for primary routing information in the second telecommunications network N2.

In order now to simplify the connection control process from the first telecommunications network N1 relating to the subscriber station TLN to the second telecommunications network N2, with regard to the situation illustrated in Figure 2, the invention provides, as shown in Figure 3, that, once the subscriber station TLN has been connected to the local exchange OV2 of the second telecommunications network N2, the primary routing information in the first telecommunications network N1 is also changed such that connection requests V1 originating from the first telecommunications network N1 to the subscriber station TLN are passed from the first telecommunications network N1 via the connection point GW to the second telecommunications network N2, to be precise to the local exchange OV2 in that network.

The secondary routing information which is entered, as shown in Figure 2, in table SLT1 of the local exchange OV1 of the first telecommunications network N1 relating to the subscriber station TLN with the telephone number is now superfluous, and it is deleted so as to produce the state shown in Figure 3.

Furthermore, details in the relevant table SLT1 relating previously to the subscriber station TLN with the telephone number x are deleted, since they are no longer required here.

At this point, it should be noted that a more detailed explanation of the details entered in the columns U in the tables for secondary routing information and on the characterization of a "changing over" subscriber station as being involved in the change, will be described in more detail further below in conjunction with Figures 6 to 8.

A second embodiment or variant of the method according to the invention will be explained in the following text with reference to Figures 4 and 5.

According to Figure 4, secondary routing information 1 is initially stored in the table SLT2 for secondary routing information in the local exchange OV2 of the second telecommunications network N2 relating to the subscriber station with the telephone number "x", and this secondary routing information relating to the subscriber station TLN in the situation where it is not accessible or is present in the second telecommunications network N2 defines the setting up of a connection via the said connection point GW to the first telecommunications network N1 and, in this network, to the local exchange OV1 (see dashed line). Furthermore, a symbol "w" (subscriber being changed) is entered in the column U in the relevant table SLT2 relating to the subscriber station TLN with the telephone number x. The primary routing information in the table PLT2 of the second telecommunications network N2 relating to the said subscriber station TLN is then changed in such a manner that connections from the second telecommunications network N2 to the relevant subscriber station TLN are set up to the local exchange OV2 of this second telecommunications network N2.

As long as the subscriber station TLN is still connected to the local exchange OV1 of the first telecommunications network N1, it is thus fully accessible for connection requests V1 and V2 from both telecommunications networks N1 and N2.

Based on the method measures and the situations already described in conjunction with Figure 4, the subscriber station TLN is then disconnected from the local exchange OV1 of the first telecommunications network N1 and is connected to the local exchange OV2 of the second telecommunications network N2. It thus continues to be fully accessible for connection requests V2 from the telecommunications network N2, although it is now no longer accessible for connection requests V1 from the first telecommunications network N1. This situation changes once the method measures whose results are shown in Figure 5 have been carried out.

The measures mentioned above relate firstly to deactivation of the secondary routing information relating to the subscriber station TLN in the local exchange OV2 of the second telecommunications network once the relevant subscriber station TLN has been connected to this local exchange, and, secondly, to a measure on the basis of which the primary routing information in the first telecommunications network N1, to be precise in its table PLT1, is changed in such a manner that connection requests V1 originating from the first telecommunications network and intended for the subscriber station TLN are passed from the first telecommunications network N1 via the connection point GW between the two telecommunications networks N1 and N2 to the second telecommunications network N2. To take account of these measures, the table PLT1 for primary routing information in the first telecommunications network N1 is changed in such a manner that a numeral 2 is now entered in the column N for the subscriber station TLN with the telephone number "x". Once the measures described

above have been carried out, the subscriber station TLN, which is now connected to the local exchange OV2 of the second telecommunications network N2, is once again fully accessible using its original telephone number "x", from both telecommunications network N1 and N2, and can set up connections to subscriber stations in these telecommunications networks N1 and N2 without any problem.

The symbol w entered in the column U of the table SLT2 for the subscriber station TLN with the telephone number "x" is evaluated, in a corresponding manner to that which has been explained in conjunction with Figure 2, in the course of setting up a connection to this subscriber station TLN, so that in the situation where the relevant subscriber station TLN has not yet been connected to the local exchange OV2 of the second telecommunications network N2, this secondary routing information is activated and leads to the connection being passed on (V2) from the second telecommunications network via the connection point GW to the first telecommunications network, - (to be precise to the local exchange OV1 there,) - to which the subscriber station TLN is actually still connected. In the situation where the subscriber station TLN is already connected to the local exchange OV2 of the second telecommunications network N2, the relevant secondary routing information W is not activated but, in fact, the relevant subscriber station TLN can be accessed directly on the basis of connection requests V2 in the second telecommunications network N2.

Two embodiments or variants of the method according to the invention have been explained above with reference to Figures 2 and 3 and with reference to Figures 4 and 5, on the basis of which method measures are initially carried out only from the telecommunications network N1 or from the telecommunications network N2. These

are then followed by method measures which are carried out in the respective other telecommunications network N2 or N1, respectively.

An embodiment or variant of the method according to the invention, which combines or jointly utilizes the advantages of the two method variants explained above, will be explained in the following text with reference to Figures 6 to 8.

The situation at the start of the process of switching the subscriber station TLN, which is connected to the first telecommunications network N1, from this first telecommunications network N1 to the second telecommunications network N2 is shown in Figure 6. First of all, so-called secondary routing information is stored in the local exchanges OV1 and OV2, to be more precise in the tables SLT1 and SLT2. This secondary routing information indicates the local exchange or telecommunications network to which the subscriber station TLN under consideration will be connected or is still connected. In other words, this means that the secondary routing information stored in the table SLT1 from the telephone number x entered in the column T and from the network details 2 entered in the column N indicates that connection requests which occur in the telecommunications network N1 to the subscriber station TLN will intrinsically be passed on from the local exchange OV1 to the telecommunications network N2, although this is superfluous in the present case, since the subscriber station TLN is still connected to the local exchange OV1. The switching process which takes place in the course of a connection request or the process of setting up a connection V1 in the telecommunications network N1 uses the primary routing information which is contained in the table PLT1 to identify the fact that the connection for the subscriber station TLN with the telephone number x is to be set up to the local

exchange OV1 and that, owing to the presence of the relevant subscriber station, this connection must not be diverted to the telecommunications network N2.

The details T=x and N=1 which are entered for the subscriber station TLN in the table SLT2 are irrelevant if the primary routing information in the second telecommunications network N2 still refers to the first telecommunications network N1 for the subscriber station TLN under consideration.

However, the primary routing information in the table PLT2 relating to the subscriber station TLN under consideration in the telecommunications network N2 is now changed so that connections or connection requests V2 in this second telecommunications network N2 to the relevant subscriber station TLN with the telephone number x are set up to the local exchange OV2 of this second telecommunications network N2. In contrast to the situation in Figure 1, a 2 is now entered in the column N in the table PLT2 for the telephone number x, which is contained in column T of this table.

A connection, which takes account of this primary routing information in the second telecommunications network N2, to the subscriber station TLN with the telephone number x is thus first of all set up to the local exchange OV2 of the second telecommunications network N2 where, on the basis of the secondary routing information entered in the table SLT2 there, and owing to the fact that the desired subscriber station TLN is not present - since it is still connected to the local exchange OV1 of the first telecommunications network N1 - it is passed on via the common connection point GW to the local exchange OV1 of the first telecommunications network N1. Thus, as before, the subscriber station TLN can be accessed using its telephone number x in both telecommunications networks N1 and N2.

Before describing Figures 7 and 8, the tables SLT1 and SLT2 which are intended for storage of the secondary routing information will once again be described. These tables each still have a column U, in each of which a symbol w is entered. These details are additional details which, in the course of connection requests relating to the subscriber station TLN under consideration, are passed to the respective local exchange provide, - (for example, in the case of the local exchange OV1 of the first telecommunications network N1, information about a subscriber station which is involved in the change, and in the case of the local exchange OV2 of the second telecommunications network N2,) - information about a subscriber involved in the change. These details can be evaluated by the switching process in the course of respectively setting up the connection to the subscriber station TLN, so that, in the situation where the subscriber station TLN is still connected to the local exchange OV1 or is already connected to the local exchange OV2, the connection is set up to this subscriber station TLN via the relevant local exchange. If, on the other hand, the relevant subscriber station TLN is not yet connected to the local exchange OV2 or is no longer connected to the local exchange OV1, then the relevant details are evaluated by the switching process which takes place in the course of setting up the respective connection to the subscriber station TLN, such that the associated secondary routing information is used. In other words, the connection request is passed on to the other telecommunications network.

With regard to the evaluation of the details in the tables SLT1 and SLT2 which have been mentioned above, it should be noted that the fault state of the subscriber access line can be used as a criterion for activation/deactivation of the secondary routing information for the respective subscriber station in the relevant local exchanges.

In the situation where this is an analog subscriber station, the fault state can be caused by grounding or a short circuit after disconnection or before connection of the subscriber line; in the situation where this is a digital subscriber station, its access line may have a carrier signal applied to it all the time which, if the line is open-circuit, allows rapid line fault identification or, if the subscriber station TLN is connected, rapid identification of the end of a fault.

Figure 7 shows the method step according to which the subscriber station TLN has been disconnected from the local exchange OV1 of the first telecommunications network N1 and has been connected to the local exchange OV2 of the second telecommunications network N2. In this case, the secondary routing information relating to the subscriber station TLN in the table SLT2 is deactivated - which makes it possible to identify the end of a line fault - and the corresponding secondary routing information in the table SLT1 is activated, since a line fault has been caused. The subscriber station TLN can now be accessed directly in the telecommunications network N2 for connection requests V2 occurring there, while, in the case of connection requests V1 which occur in the telecommunications network N1 for the subscriber station TLN with the telephone number x, the same procedures now take place there, - (to be more precise in the local exchange OV1,) - as those which have already been explained with reference to Figure 6 for the local exchange OV2 of the second telecommunications network N2. Thus, after a brief switching moment, the subscriber station TLN is immediately accessible once again in and from both telecommunications networks N1 and N2.

Finally, Figure 8 shows the next method steps, which are still to be explained. First of all, once the subscriber station TLN has been connected to the local exchange

OV2 of the second telecommunications network N2, the primary routing information in the table PLT1 of the first telecommunications network N1 is changed such that connection requests V1 originating from the first telecommunications network N1 for the subscriber station TLN are passed from the first telecommunications network N1 via the said connection point GW to the second telecommunications network N2.

The secondary routing information relating to the subscriber station TLN is then deleted in the local exchanges OV1 and OV2 of both telecommunications networks N1 and N2.

Finally, in the local exchange OV1 of the first telecommunications network N1, details relating to the subscriber station TLN which was previously connected there are deleted and, in the local exchange OV2 of the second telecommunications network N2, details which were previously stored there together with the secondary routing information and on the basis of which the relevant subscriber station is involved in the change, are changed to details which now indicate the connection of the relevant subscriber station TLN to the local exchange OV2.

Thus, according to Figure 8, corresponding conditions are produced in both telecommunications networks N1 and N2 for the subscriber station TLN and these are, to a certain extent, mirror images of the original conditions, which have been described with reference to Figure 1.

With regard to the method according to the invention explained above, it should also be noted that a situation can occur where, in the course of setting up a connection, these connections are passed more than once via the connection point GW between the two telecommunications networks N1 and N2, which is regarded as being an undesirable network load. In order to reduce this network load, such connections can

be detected and cleared by means of so-called transient node passage counting. Such connection control can, however, likewise be avoided by special measures in the local exchanges OV1, OV2 which are involved. One of these special measures may be, for example, for the local exchange which passes on the relevant connection not to pass on any other connections or attempts to set up connections to the subscriber station TLN during the period of a guard time after a connection has been passed on. In the present situation, the risk of such connections occurring is limited essentially to the time interval within which the subscriber station TLN is being switched from the first telecommunications network N1 to the second telecommunications network N2.

The switching of the subscriber station TLN under consideration from the first telecommunications network N1 to the second telecommunications network N2 has been explained above as a physical switching process, in which the subscriber station TLN is connected directly to the local exchange. However, on the basis of modern network architecture, a subscriber station TLN may also be connected to an access network, which is connected to the local exchange via an access network interface, for example a V5.2 interface. In this case, based on the respective secondary routing information, the availability/nonavailability (which is signaled to the local exchange via the access network interface) of the subscriber stations TLN can be used as a criterion for activation or deactivation of the setting up of a connection to a subscriber station TLN which is connected in such a way.

Finally, it should also be mentioned that the primary and secondary routing information in the telecommunications networks N1 and N2 under consideration can be stored and made available either locally or centrally. This relates not only to the tables

PLT1 and PLT2, respectively, for primary routing information, but also to the tables SLT1, SLT2 for secondary routing information.

Although other modifications and changes may be suggested by those skilled in the art, it is the intention of the inventors to embody within the patent warranted hereon all changes and modifications as reasonably and properly come within the scope of their contribution to the art.